Lake Erie Fisheries Report 1984

Ontario
Ministry of Natural Resources

Lake Erie Fisheries
Report 1984

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A. RESUMÉ OF 1984 CATCH STATISTICS

a. Commercial

In 1984, the total commercial catch reported from the Canadian waters of Lake Erie declined from that of 1983 by 9.7 million pounds to 36.0 million pounds (Table 1). The landed value of the catch increased from 17.6 million dollars in 1983 to 26.3 million dollars in 1984 (Table 2).

The catch of rainbow smelt continued to decline from 29.6 million pounds in 1983 to 16.1 million pounds in 1984, a decrease of 13.5 million pounds. The decline occurred primarily in the major smelt fishing areas in OE-4 and OE-5. Catch from the central basin statistical district OE-2 was 1.1 million pounds in 1983 and the smelt fishery in that area was essentially non-existent in 1984 with a reported catch of less than 3,000 pounds (Table 3). In 1984, the reduction in catch in OE-4 and OE-5 was attributed to declining abundance and the low abundance of smelt in OE-2 was not adequate to stimulate fishing for this species. The landed value of rainbow smelt declined to 1.6 million dollars in 1984 from 3.6 million dollars in 1983.

Total landings of yellow perch improved from 1983 to 1984 with the landed catch increasing from 5.7 to 9.2 million pounds (Table 2). The primary perch fishing districts of OE-1 and OE-2 experienced the greatest absolute increase over 1983. The total value of the yellow perch increased from 8.8 million dollars in 1983 to 16.8 million dollars in 1984.

The catch of white bass in 1984 was 4.3 million pounds and remained essentially unchanged from the 4.6 million pounds harvested in 1983 (Table 2). Consistent with the stability of harvest of white bass from 1983 to 1984, the value of the catch remained constant with the 1984 landed value being 1.8 million dollars.

The landed catch of yellow pickerel (walleye) as summarized from commercial fishermen's reports of landings increased from 3.2 million pounds in 1983 to 4.2 million pounds in 1984 (Table 2). The value increased from 3.2 million dollars in 1983 to 5.8 million dollars in 1984.

Lake whitefish were not allocated to the commercial fishery in 1984. Minor amounts reported were the result of incidental catch (Table 3).

White perch landings as reported by commercial fishermen continued to increase in 1984 with 630 thousand pounds being recorded. Currently white perch are taken incidentally in fisheries which target on other species. Records of catch of white perch exist at the species level when fish are sold for human consumption. Alternatively, white perch are marketed as part of the mixed species catch or they are discarded.

Data on age composition and mean length and weight at age for selected species sampled from the commercial catches are presented in Tables 4 through 9 inclusive.

b. Sport

In 1984, direct contact creel surveys were conducted on the summer boat fisheries in the following areas:

The vicinity of Chicken, Hen and East Sister Islands (Sector I)

The vicinity of Pelee Island (Sector II)

Long Point Bay (Sector VI)

In addition, the winter ice fishery in Inner Long Point Bay was surveyed, and an angler diary programme was initiated with charter boat operators.

In 1984, estimated angling pressure and estimated harvests (Tables 10 and 11) in the Long Point Bay summer fishery declined from those of 1983.

In the western basin (Sectors I and II) walleye fishery (Table 12), estimated angling pressure for 1984 declined by 32% from the mean for the previous three-year period while angler success rates for walleye improved.

A complete-trip, on-ice, winter creel survey at Inner Long Point Bay from January 3 to February 18, 1984 revealed that an estimated 103,858 rod-hours of angling pressure resulted in an estimated harvest of 275,954 yellow perch and small numbers of incidentally harvested rainbow smelt and northern pike.

The diary programme which was initiated with 35 known charter boat operators in 1984 has shown potential for providing good information. To increase the sample size, it will be expanded in 1985 to include members of angling clubs and other interested individuals who wish to participate.

Table 1. Canadian Waters of Lake Erie

Commercial Landings

1960-1984

Year	Total Pounds	Total Value
1960	28,181,000	$ 2,033,000
1961	36,350,000	2,516,000
1962	43,296,419	2,296,635
1963	34,069,000	2,523,635
1964	25,391,428	2,377,284
1965	35,096,120	3,319,307
1966	41,435,283	3,104,813
1967	37,775,009	3,339,460
1968	39,415,250	2,973,814
1969	48,025,996	4,244,149
1970	31,755,446	3,770,281
1971	29,075,559	4,254,692
1972	29,978,000	5,324,000
1973	39,829,000	7,038,000
1974	38,686,000	5,634,000
1975	30,548,620	6,009,093
1976	25,729,080	6,000,970
1977	35,853,556	7,736,701
1978	40,159,610	9,883,626
1979	40,839,668	17,555,598
1980	42,849,000	14,207,000
1981	44,711,277	20,279,830
1982+	55,588,000	27,002,000
1983+	45,682,046	17,613,206
1984+	36,004,933	26,315,406

+ Preliminary data.

Table 2. Commercial fish production and value from the Canadian waters of Lake Erie, 1983 and 1984[a] shown in millions of pounds and millions of dollars.

Species	1983		1984		Change in Catch	Change in Value
	Pounds	Value	Pounds	Value		
Smelt	29.6	3.6	16.1	1.6	-13.5	-2.0
White bass	4.6	1.7	4.3	1.8	-0.3	+0.1
White perch	0.06	0.02	0.6	0.2	+0.54	+0.18
Yellow perch	5.7	8.8	9.2	16.8	+3.5	+8.0
Y. pickerel (walleye)	3.2	3.2	4.2	5.8	+1.0	+2.6
Other	2.5	0.3	1.6	0.1	-0.9	-0.2
Total	45.7	17.6	36.0	26.3	-9.7	+8.7

[a] Preliminary figures - not for publication.

Table 3. Lake Erie commercial fish landings by statistical district from Canadian waters of Lake Erie, 1984. (Preliminary only).

Species	OE-1	OE-2	OE-3	OE-4	OE-5	Total Landings (lbs)	Total Value ($)
Bowfin			43	23,905		23,948	4,860
Bullheads	93	9	190	47,401	91	47,784	12,424
Burbot	2	760	235	370	1,880	3,247	20
Carp	78,970	1	1,701	9,229	109	90,010	8,796
Catfish	51,446	4,454	1,230	3,090	293	60,513	24,285
Crappies			940	20,296		21,236	29,469
Eel	5		4	338		347	206
Freshwater drum	107,238	109,191	35,079	244,533	14,476	510,517	46,645
Gizzard shad	1,368				8,000	9,368	68
Lake trout				659	61	720	680
Lake whitefish	367	224		2,324		2,915	1,091
Northern pike	8		1,003	13,278		14,289	11,771
Pacific salmon	3,601	1,256	629	499		5,985	4,369
Quillback	6,246					6,246	480
Rainbow smelt	4,233	2,975	3,182	14,058,818	1,986,800	16,056,008	1,571,609
Rock bass	234	3		23,890	1,012	25,139	14,734
Sturgeon	64			13		77	138
Suckers	5,987	9	42	2,934	1,877	10,849	811
Sunfish		136	989	66,450		67,575	42,892
White bass	2,052,476	1,058,452	617,004	515,621	64,959	4,308,512	1,814,607
White perch	163,386	310,417	120,903	16,285	19,252	630,243	169,846
Yellow perch	2,730,236	4,653,586	1,024,492	562,127	275,327	9,245,767	16,785,837
Y. pickerel (walleye)	3,127,464	755,273	200,512	68,688	40,398	4,192,334	5,761,393
Mixed	275,834	196,181	65,197	59,387	74,706	671,305	8,373
Total Landings (lbs)	8,609,258	7,092,927	2,073,374	15,740,134	2,489,241	36,004,933	
Total Landed Value ($)	10,562,505	9,826,339	2,238,092	2,896,674	791,796		26,315,406

E. T. Cox March 2, 1985

Table 4. Year-class composition, average total length (cm) and weight (g) of yellow perch (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1984. n is sample size.

Season[a] and Statistical District	Year Class	1982	1981	1980	1979	1978	1977	1976	n
	Age	2	3	4	5	6	7	8	
Spring	% Comp.	0.6	27.9	65.6	5.4	0.4	0.2		
OE-1	Length	15.6	19.9	20.3	20.9	23.2	21.9		520
	Weight	52.7	96.0	101.0	105.4	173.0	117.0		520
									520
Summer	% Comp.	8.3	60.1	30.9	0.6				
OE-1	Length	18.7	19.4	19.7	20.3				760
	Weight	86.1	95.2	99.6	98.6				760
									760
Fall	% Comp.	23.2	58.9	16.7	1.1				
OE-1	Length	20.0	20.2	20.9	21.4				439
	Weight	97.9	101.9	115.4	118.6				439
									439
Spring	% Comp.	0.3	39.1	57.5	3.0				
OE-2	Length	16.8	19.8	20.6	21.4				933
	Weight	59.3	97.1	106.4	118.5				933
									933
Summer	% Comp.	20.8	45.8	32.4	0.8	0.1			
OE-2	Length	19.5	19.7	20.0	21.1	20.9			1278
	Weight	100.0	102.8	107.2	123.2	101.0			1278
									1278
Fall	% Comp.	61.0	32.4	6.5					
OE-2	Length	19.8	20.6	20.7					680
	Weight	102.9	115.1	115.9					680
									680
Spring	% Comp.	1.2	54.9	41.0	2.7	0.2			
OE-3	Length	16.5	19.8	21.0	23.0	22.5			483
	Weight	55.5	98.6	116.3	165.5	129.0			483
									483

[a] Spring = April-June, Summer = July-September, Fall = October-December.

continued....

Table 4 continued.

Season and Statistical District	Year Class / Age	1982 / 2	1981 / 3	1980 / 4	1979 / 5	1978 / 6	1977 / 7	1976 / 8	n
Summer	% Comp.	28.4	64.1	7.2		0.2			408
OE-3	Length	19.6	20.5	22.8		30.5			408
	Weight	110.2	120.3	172.3		436.0			408
Fall	% Comp.	51.7	41.4	6.9					360
OE-3	Length	21.0	21.8	23.8					359
	Weight	130.5	147.9	193.4					360
Spring	% Comp.	0.4	39.9	41.5	16.4	1.5	0.1		719
OE-4	Length	19.4	19.8	20.6	21.2	23.6	21.2		718
	Weight	90.6	98.1	107.5	113.9	177.9	112.0		719
Summer	% Comp.	12.2	56.9	24.9	5.3	0.5			1639
OE-4	Length	19.3	19.7	20.0	20.6	23.5			1636
	Weight	102.1	106.6	106.5	117.1	176.4			1637
Fall	% Comp.	44.3	49.4	4.9	1.3				559
OE-4	Length	20.4	21.4	21.5	23.0				559
	Weight	114.2	135.0	132.9	163.6				559
Spring	% Comp.		78.6	14.5	4.7	1.9		0.3	320
OE-5	Length		20.6	22.3	23.2	26.1		29.2	315
	Weight		110.1	137.0	160.2	229.3		350.0	320
Summer	% Comp.	13.0	76.9	8.4	1.4	0.2			438
OE-5	Length	20.3	21.0	22.3	23.4	24.2			438
	Weight	114.0	121.8	147.9	183.7	188.0			438
Fall	% Comp.	33.3	59.7	5.0	1.9				160
OE-5	Length	20.6	21.4	22.2	21.9				159
	Weight	120.5	133.6	147.1	142.7				160

Table 5. Year class composition, average total length (cm) and weight (g) of rainbow smelt (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1984. n is sample size.

Season[a] and Statistical District	Year Class / Age	1983 / 1	1982 / 2	1981 / 3	1980 / 4	n
Winter	% Comp.		71.6	27.4	.9	532
OE-4	Length		12.8	14.1	15.8	530
	Weight		10.6	15.1	20.8	532
Spring	% Comp.	0.2	67.4	30.0	2.3	430
OE-4	Length	7.1	12.5	14.1	14.9	426
	Weight	2.0	9.9	14.0	16.5	430
Summer	% Comp.	4.2	87.6	8.2		355
OE-4	Length	12.7	13.8	14.4		355
	Weight	12.0	15.9	18.9		355
Fall	% Comp.	12.5	78.8	8.8		80
OE-4	Length	14.9	15.8	16.8		80
	Weight	23.1	24.9	28.0		80
Fall	% Comp.		92.3	7.7		13
OE-5	Length		16.8	15.5		13
	Weight		27.2	20.0		13

[a] Winter = January-March, Spring = April-June, Summer = July-September, Fall = October-December.

Table 6. Year-class composition, average total length (cm) and weight (g) of yellow pickerel (walleye) (sexes combined) from commercial catch samples taken from large mesh gillnets (≥89 mm) in western Lake Erie (OE-1), by season, 1984. n is sample size. Data are presented for the two size categories into which walleye are sorted prior to landing.

Season[a] and Statistical District	Year Class	1983	1982	1981	1980	1979	1978	1977	1976	1975	n
	Age	1	2	3	4	5	6	7	8	9	
		Walleye in size category 1 (equal to or less than 534 mm in total length)[b]									
Spring OE-1	% Comp.		3.0	33.9	47.2	9.4	5.0	1.1	0.3		703
	Length		37.6	43.4	48.5	52.2	53.5	57.8	58.1		702
	Weight		538.0	736.7	843.3	1,164.8	1,459.0	2,015.0	-		80
Summer OE-1	% Comp.		78.0	15.0	5.3	1.4	0.3				359
	Length		37.9	44.4	48.1	50.4	55.3				359
	Weight										-
Fall OE-1	% Comp.	0.7	93.9	3.4	1.3	0.1	0.1	0.1			700
	Length	37.0	40.8	46.7	51.6	50.6	61.0	57.3			700
	Weight	-	703.2	1,012.7	1,445.0	-	2,215.0	-			100
		Walleye in size category 2 (greater than 534 mm in total length)									
Spring OE-1	% Comp.				9.5	21.9	35.8	23.3	6.6	2.9	137
	Length				54.9	57.5	59.8	61.8	65.0	68.0	137
	Weight				-	-	2,006.0	2,246.6	2,465.0	-	20
Summer OE-1	% Comp.		52.5	25.0	17.5	2.5	2.5				40
	Length		40.6	45.4	49.1	54.0	49.9				40
	Weight										-
Fall OE-1	% Comp.		77.3	12.7	5.0	2.3	0.9	1.4			220
	Length		41.5	47.1	52.2	55.9	59.3	60.7			219
	Weight		802.6	1,143.0	963.0	-	2,467.0	-			20

[a] Spring = April-June, Summer = July-September, Fall = October-December

[b] Size category 1 represents 85% of the harvest by number.

Table 7. Year-class composition, average total length (cm) and weight (g) of white bass (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1984. n is sample size.

Season[a] and Statistical District	Year Class	1983	1982	1981	1980	1979	1978	n
	Age	1	2	3	4	5	6	
Spring OE-1	% Comp.		0.7	74.6	22.4	1.8	0.4	1354
	Length		27.6	30.1	32.9	35.4	36.9	1354
	Weight		-	363.7	458.8	522.0	-	120
Summer OE-1	% Comp.		33.3	54.1	11.9	0.6		318
	Length		30.6	31.6	32.1	36.5		318
	Weight		-	-	-	-		-
Fall OE-1	% Comp.	0.2	46.5	49.3	3.9			1672
	Length	27.9	30.2	32.2	34.2			1670
	Weight	316.0	438.4	503.7	505.6			200
Spring OE-2	% Comp.			79.9	18.7	0.4	1.1	556
	Length			30.2	33.3	37.4	36.9	556
	Weight			397.5	547.8	775.0	711.7	398
Fall OE-2	% Comp.		30.8	66.7	1.9	0.6		318
	Length		30.3	32.2	36.6	38.1		318
	Weight		423.1	502.2	-	-		80

[a] Spring = April-June, Summer = July-September, Fall = October-December.

continued...

Table 7 continued.

Season and Statistical District	Year Class	1983	1982	1981	1980	1979	1978	n
	Age	1	2	3	4	5	6	
Spring OE-3	% Comp.			60.0	40.0			80
	Length			29.8	33.1			80
	Weight			393.8	550.9			80
Summer OE-3	% Comp.		27.5	65.0	7.5			80
	Length		30.0	32.6	36.1			80
	Weight		406.2	535.8	726.0			80
Fall OE-3	% Comp.	0.4	26.5	68.5	4.7			558
	Length	27.8	30.3	32.3	34.6			558
	Weight	-	402.7	516.6	700.7			158
Spring OE-4	% Comp.		2.5	92.5	5.0			80
	Length		27.2	28.7	33.4			80
	Weight		284.0	347.0	577.5			80
Summer OE-4	% Comp.		12.8	84.6	2.6			78
	Length		30.0	31.5	35.1			78
	Weight		399.8	458.2	657.0			78
Fall OE-4	% Comp.	0.8	18.9	76.6	3.8			265
	Length	28.7	30.3	32.4	34.5			265
	Weight	354.0	423.3	545.7	723.3			159
Spring OE-5	% Comp.			87.5	10.0		2.5	80
	Length			30.7	32.2		39.8	80
	Weight			426.5	509.5		999.0	80

Table 8. Year-class composition, average total length (cm) and weight (g) of lake whitefish (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1984. n is sample size.

Season[a] and Statistical District	Year Class	1982	1981	1980	1979	1978	1977	1976	1973	n
	Age	2	3	4	5	6	7	8	11	
Fall	% Comp.	25.6	32.6	26.7	4.7	2.3	4.7	2.3	1.2	86
OE-1	Length	39.4	43.6	47.5	49.0	55.9	53.9	59.2	54.5	86
	Weight	585.7	810.0	1,104.9	1,117.3	1,893.5	1,767.8	2,253.0	1,973.0	80

[a] Fall = October-December.

Table 9. Year-class composition, average total length (cm) and weight (g) of white perch (sexes combined) from Lake Erie commercial catch samples by season and statistical district, 1984. n is sample size.

Season[a] and Statistical District	Year Class / Age	1983 / 1	1982 / 2	1981 / 3	1980 / 4	n
Spring	% Comp.		76.3	23.7		76
OE-1	Length		17.1	19.3		75
	Weight		70.5	111.4		76
Summer	% Comp.	0.9	93.0	6.1		115
OE-1	Length	11.8	17.5	19.1		115
	Weight	22.0	84.7	109.4		115
Fall	% Comp.	22.9	74.3	2.9		70
OE-1	Length	17.2	19.3	20.0		69
	Weight	79.7	119.8	141.5		70
Spring	% Comp.		78.2	21.8		124
OE-2	Length		17.3	19.1		124
	Weight		77.7	108.0		124
Summer	% Comp.	4.4	81.3	14.3		203
OE-2	Length	16.6	17.5	19.1		203
	Weight	66.0	83.6	109.0		203
Fall	% Comp.	28.3	65.5	6.2		145
OE-2	Length	17.4	19.3	18.9		145
	Weight	82.5	127.0	110.1		145
Spring	% Comp.	1.0	78.6	20.4		98
OE-3	Length	15.5	17.1	18.8		95
	Weight	50.0	77.5	109.3		98
Summer	% Comp.	5.1	74.6	20.3		59
OE-3	Length	15.6	17.2	17.9		59
	Weight	57.7	78.1	87.8		59
Fall	% Comp.	23.3	63.3	13.3		60
OE-3	Length	17.4	20.0	21.0		60
	Weight	88.0	147.8	171.1		60

[a] Spring = April-June, Summer = July-September, Fall = October-December.

continued..

Table 9 continued.

Season and Statistical District	Year Class / Age	1983 / 1	1982 / 2	1981 / 3	1980 / 4	n
Spring OE-4	% Comp.		76.6	23.4		128
	Length		17.5	19.4		128
	Weight		81.9	118.3		128
Summer OE-4	% Comp.	3.8	85.5	10.3	0.3	290
	Length	15.6	17.2	19.5	23.7	290
	Weight	60.1	82.0	121.8	208.0	290
Fall OE-4	% Comp.	34.8	48.7	16.5		115
	Length	16.7	19.5	22.5		115
	Weight	72.6	133.3	207.4		115
Spring OE-5	% Comp.		55.7	44.3		79
	Length		17.7	19.2		78
	Weight		83.0	110.4		79
Summer OE-5	% Comp.	16.8	74.2	9.0		89
	Length	16.8	17.6	18.1		89
	Weight	72.0	87.0	95.2		89
Fall OE-5	% Comp.	35.9	59.0	5.1		39
	Length	16.0	19.8	22.8		39
	Weight	54.9	126.2	206.5		39

Table 10. Estimated sport harvest (in number kept) by sector on Lake Erie during summer creel census on Lake Erie, 1984.

Species	Sector[a] and Census Period		
	I July 1-Aug. 31	II July 1-Aug. 31	VI May 1-Aug. 31
Yellow perch	143	96	59,042
Y. pickerel (walleye)	4,426	34,278	791
White bass		278	447
White perch	34	166	
Smallmouth bass	808	5,104	40,751
Rock bass	152		38,242
Freshwater drum	5	46	1,722
Largemouth bass			4,246
Northern pike			3,273
Pumpkinseed			6,703
Channel catfish	207	1,382	121
Bluegill			582
Black crappie			41
White crappie			498
Total	5,775	41,350	156,459

Sector	Area
I	Vicinity of Hen, Chick and East Sister Islands
II	Vicinity of Pelee Island
VI	Long Point Bay

Table 11. Estimated angling effort by sector during summer creel census on Lake Erie, 1984.

Sector[a] and Census-period	Effort	
	Rod-hours	Angler-hours
I (July 1 - August 31)	11,950	12,075
II (July 1 - August 31)	69,496	70,088
VI (May 1 - August 31)	279,175	293,936

[a]

Sector	Area
I	Vicinity of Hen, Chick and East Sister Islands
II	Vicinity of Pelee Island
VI	Long Point Bay

Table 12. Comparative sport fishery statistics for walleye in the Western Basin (Sector I and II), Lake Erie, 1975-1984.

Year	Estimated fishing effort (rod-hours)	Estimated catch (number)	Estimated harvest (number)	CUE[a]	CUE[b]
1975	45,846	7,707	7,177	0.168	-
1976	97,176	50,949	49,029	0.524	-
1977	129,179	70,561	68,954	0.559	-
1978	146,098	121,441	112,057	0.831	0.758
1979	95,555	88,646	77,765	0.928	0.886
1980	91,237	58,573	56,356	0.642	0.672
1981	136,398	72,467	69,799	0.531	0.515
1982	106,566	50,532	48,058	0.474	0.498
1983	116,649	47,919	40,177	0.411	0.396
1984	81,446	68,314	38,704	0.839	0.636

[a] CUE for walleye caught by all anglers derived from estimated effort and estimated catch.

[b] CUE for walleye caught by walleye anglers, derived from observed effort and observed catch.

B. STATUS OF MAJOR FISH SPECIES

Relative indices of abundance for the young-of-the-year (YOY) of the major species in Lake Erie were generally greater than in previous years (Table 13). Good hatches of yellow perch, walleye, white perch and alewife were evident from sampling in the western basin. White perch were particularly strong in the western basin with some showing in the central basin. The lack of yearling smelt in index trawling confirmed the weakness of the 1983 year-class and there was a strong showing of YOY rainbow smelt particularly in the eastern basin.

Late summer bottom trawling in the western basin confirmed good hatches of the above species as well as for gizzard shad (Table 14). Indices for white perch, yellow perch and white bass were the largest for the period of bottom trawling in this basin.

a. Rainbow smelt

Large numbers of yearling rainbow smelt were commercially harvested in the fall of 1982 and 1983. The 1982 year-class was expected to show strongly in the commercial fishery in the spring and fall of 1984, but this did not really occur.

Although the percent composition of yearling smelt (1982 year-class) captured in 1983 was only 20-30%, the disconcerting aspect is that yearlings were taken in the spring and summer in the central basin, in the spring, summer and fall, in the eastern basin and in the fall from the far eastern basin. The continued effort on this year-class and now with the lack of a strong 1983 year-class, prospects for 1985 are not encouraging until the latter part of the year when the relatively strong 1984 year-class will be recruited as yearlings. Some remnants of the 1982 year-class will still be available during the spring of 1985.

b. Yellow perch

Catch per unit effort (c/f) (number per 1000 m of experimental gillnet) of yellow perch in all three basins decreased again in 1984. Although there were some increases (20%) in summer index catches in the western and central basins, overall c/f had significantly decreased; 20% lower in the western basin, 50% in the central basin and 56% in the eastern basin.

Although there was a broad range of age classes in the eastern basin samples during the spring and summer, c/f was reduced from that in 1983. The 1980 and 1981 year-classes were predominant in the spring with the strong 1982 year-class becoming more evident in the late summer (Table 15).

The presumably weak 1983 year-class made up 18% of the summer sample.

Catches in the central basin were down by about 20-40%. The strong 1982 year-class was very predominant throughout the spring, summer and fall (Table 15). Twenty percent of the samples was made up of the fair 1981 year-class. The weak 1983 year-class was present in spring samples but not evident in the summer and fall. The strong 1980 year-class was no longer present. The recruited 1982 year-class will likely continue to be available and dominant in the fishery through the spring and fall of 1985.

Index samples in the western basin in the spring and summer were mainly from the 1981 and 1982 year-classes (Table 15). In the fall, the 1982 year-class (60%) was strongest with a slight showing of the 1983 year-class. The strong 1982 year-class will continue to be available to the fishery in the spring and fall of 1985. The 1984 year-class is considered fairly strong but will not be recruited until 1986.

c. Yellow pickerel (walleye)

The 1982 year-class continued to dominate index gillnet catches from the western and west central basins. Although catch per unit effort (c/f) for this year-class as yearlings was not as great as the 1977 year-class as yearlings, the c/f as two year old fish was substantially greater (Table 16). Over 80% of the samples from both bottom and canned gillnets were from the 1982 year-class. Other minor contributors were from the 1981 year-class (4.4%) and the 1983 year-class (4%). These latter year-classes will continue to be represented in the population but the fishable stock in 1984 will again be dominated by the strong 1982 year-class. The good 1984 year-class will not be recruited to the fishery until 1985 and 1986.

d. White bass

A good hatch of white bass was evident from index trawling in the western and west-central basins. The index was approximately three times greater in the western basin. Index gillnet samples in the spring in the eastern and central basins showed that over seventy percent (70%) were from the 1981 year-class. Additional index gillnetting in the western basin showed a threefold increase in c/f from bottom gillnets. The majority of these fish were from the 1981 year-class with a good proportion from the 1982 year-class (Table 17).

e. White perch

Catch per unit of effort of white perch from experimental gillnets in the central and eastern basins was much greater than in 1983. Although there was a significant increase in catches during the summer in the western basin, overall c/f was down by 36% in early fall. However, additional bottom gillnetting in the late fall showed a large increase in c/f.

Three age-classes were present in index samples from each basin with the 1982 year-class predominating through all seasons and all areas (Table 18). This year-class and the subsequent 1983 year-class were quite strong and will continue in the fishery through 1985. The very strong 1984 year-class (Table 18) will become evident in 1985 and 1986.

Table 13. Relative indices of abundance (catch per trawling hour) of selected fish species at index fishing stations in the basins of Lake Erie, 1984.

Species and Age Group		LAKE ERIE Eastern	Central	Western	Whole Lake
Rainbow smelt	YOY	7690	627	1506	5196
	YRLG		43	18	85
	ADULT	217	339	6	193
Yellow perch	YOY	13	184	1031	160
	YRLG		8	13	5
	ADULT	49	14	148	112
Walleye	YOY		1	13	1
	YRLG		<1	12	1
	ADULT		1	5	1
White bass	YOY	6	145	53	65
	YRLG		<1		<1
	ADULT	<1	2	1	1
White perch	YOY		151	3263	311
	YRLG		4	2	3
	ADULT		5	28	4
Freshwater drum	YOY				
	YRLG		1	1	<1
	ADULT	1	6	13	5
Alewife	YOY	1	324		129
	YRLG	<1	85	1253	244
	ADULT	<1	533	389	205
Gizzard shad	YOY	5	9	4	7
	YRLG	1		249	31
	ADULT	3	11		<1
Spottail shiner	YOY				
	YRLG				
	ADULT		<1	13	1
Emerald shiner	YOY				
	YRLG		2		1
	ADULT	814	89	256	418
Trout perch	YOY		<1	1	<1
	YRLG		<1		<1
	ADULT	<1	2	210	21
Trawl Effort (minutes)		410 (410)[1]	450 (310)[1]	90 (60)[1]	950 (780)[1]

[1] Reduced effort used in calculating indices of young-of-the-year since the latter are not available to the sampling gear in the spring.

(number per trawling hour)

Table 14. Relative indices of abundance of the major young-of-the-year species in western Lake Erie. Data for 1977-81 are the corrected[1] outboard trawl catches for the same 7 stations fished weekly from June to October. Data since 1982 are from bottom trawl catches at the same stations during late summer.

Year	Walleye	Yellow Perch	White Bass	Freshwater Drum	Rainbow Smelt	White Perch	Effort[2] (minutes)
1977	32	1088	344	122	183		1208
1978	10	215	856	210	195		1021
1979	2	327	185	83	178		1124
1980	17	1510	415	32	242	24	939
1981	5	642	444	39	76	112	920
1982	191	1524	1105			822	400
1983	0.8	5	139	77	12	831	298
1984	26	1914	3638	12		15297	240

[1] Frontal gape and fishing area for the larger, bottom trawl was estimated to be 2.44 times greater than that for the outboard trawl. This factor was used to generate new indices for the 1977-81 period.

[2] Effort for 1977-81 includes weekly trawling from mid-June through October. Effort from 1982 is for a six week period in August-September.

Table 15. Seasonal year-class composition, average total length (cm) and average weight (g) of yellow perch (sexes combined) from index gillnetting in Lake Erie, 1984. n is sample size.

	Year Class	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	n
	Age	1	2	3	4	5	6	7	8	9	10	11	
SPRING	Eastern Basin												
	% comp.	0.2	16.3	35.8	23.2	18.0	4.3	1.2	0.4	0.2	0.2	0.2	516
	Length	11.2	13.1	16.0	18.1	19.1	20.2	22.7	26.7	32.6	32.3	35.2	
	Weight	18.0	27.4	50.4	71.6	91.7	96.9	202.4	233.5	450.5	456.1	494.0	
	Central Basin												
	% comp.	12.2	55.4	24.3	5.4	2.7							148
	Length	14.4	14.9	17.9	19.4	23.3							
	Weight	30.0	35.4	68.0	93.4	163.0							
	Western Basin												
	% comp.		30.4	44.4	22.8	1.8			0.6				171
	Length		13.6	15.9	17.4	18.2			23.7				
	Weight		27.9	44.3	58.2	64.3			176.0				
SUMMER	Eastern Basin												
	% comp.	18.4	35.6	32.0	8.9	2.8	1.5	0.6	0.2				472
	Length	13.0	14.9	17.5	18.4	18.6	18.1	23.7	28.0				
	Weight	31.3	50.6	82.0	93.9	96.8	79.0	217.7	280.0				
	Central Basin												
	% comp.	7.1	61.9	21.4	6.0	1.2		1.2		1.2			84
	Length	14.3	14.4	18.3	16.8	20.0		21.2		26.8			
	Weight	36.5	38.8	77.2	55.6	79.0		113.0		234.0			
	Western Basin												
	% comp.		53.6	35.3	10.1	1.0							306
	Length		15.0	18.0	19.5	19.7							
	Weight		46.6	79.0	97.1	94.7							
FALL	Central Basin												
	% comp.		70.3	22.3	6.7	0.7							148
	Length		17.4	19.0	19.2	20.2							
	Weight		66.2	85.7	91.1	97.0							
	Western Basin												
	% comp.	1.6	61.5	25.3	9.3	1.1	0.6		0.6				182
	Length	14.4	16.9	18.7	20.6	23.3	28.4		32.5				
	Weight	31.7	60.1	83.6	113.4	184.0	382.0		497.0				
	Combined												
	No. of fish	115	818	653	272	120	30	10	5	2	1	1	2027
	% comp.	5.7	40.4	32.2	13.5	5.9	1.5	0.5	0.2	0.1	0.05	0.05	

Table 16. Catch per unit of effort (catch/1000'gillnet) of walleye from Ontario bottom set index gillnets in western Lake Erie, fall 1978-1984.

Year	Age Class 0	1	2	3	4	5	6	7	8	Total
1978		24.81	1.15	4.55	.71	.13				31.35
1979		.13	3.44	5.03	.40	.40	.13			9.53
1980		5.10	2.89	1.06		.19	.10			9.34
1981		6.78	1.05	.42	.21	.07				8.53
1982		.45	2.63	1.47	.32	.13	.26		.07	5.33
1983		18.65	2.37	1.47	.26	.26	.13			23.14
1984	.06	1.47	31.22	1.67	.83	.58	.26	.06	.13	36.28

Table 17. Year-class composition, average total length (cm) and average weight (g) of white bass (sexes combined) from index gillnetting (bottom and canned nets) in western and west central Lake Erie, fall 1984. n is sample size.

Year Class Age	1983 1+	1982 2+	1981 3+	1980 4+	1979 5+	1978 6+	n
Western Basin							
No. of fish	10	200	292	25	2	2	531
% comp.	1.9	37.7	55.0	4.7	0.4	0.4	
Length±SD	26.8±2.1	30.0±1.6	32.0±1.6	34.2±2.8	35.6±4.4	37.4±4.5	
Weight	292.9	421.8	536.5	676.8	789.5	767.5	
West Central Basin							
No. of fish		9	30	3			42
% comp.		21.4	71.4	7.2			
Length±SD		30.7±1.7	31.9±1.6	31.5±2.2			
Weight		464.9	542.5	502.3			

Table 18. Seasonal year-class composition, average total length (mm) and average weight (g) of white perch (sexes combined) from index gillnetting in Lake Erie, 1984. n is sample size.

	Year Class / Age	1983 / 1	1982 / 2	1981 / 3	n
SPRING	Eastern Basin				
	% comp.		64.0	36.0	50
	Length		161.7	180.7	
	Weight		62.8	87.8	
	Central Basin				
	% comp.		67.3	32.7	101
	Length		164.8	184.3	
	Weight		72.8	107.0	
	Western Basin				
	% comp.	5.7	79.0	15.3	105
	Length	101.3	149.3	194.9	
	Weight	11.7	51.9	120.4	
SUMMER	Eastern Basin				
	% comp.	11.8	76.4	11.8	17
	Length	145.5	166.1	223.0	
	Weight	47.0	74.3	177.0	
	Central Basin				
	% comp.	10.0	50.0	40.0	10
	Length	169.0	187.6	177.0	
	Weight	70.0	111.4	90.3	
	Western Basin				
	% comp.	6.6	77.6	15.8	76
	Length	120.6	166.0	193.3	
	Weight	25.0	78.9	125.6	
FALL	Central Basin				
	% comp.	39.0	53.7	7.3	41
	Length	156.8	191.5	197.7	
	Weight	57.9	120.5	136.0	
	Western Basin				
	% comp.	12.2	75.6	12.2	82
	Length	163.1	187.5	204.0	
	Weight	65.8	110.4	147.6	
	Combined				
	No. of fish	40	344	98	482
	% comp.	8.3	71.4	20.3	

C. CURRENT PROGRAMS AND FUTURE PLANS

a. Fisheries Research Unit

1. Index Fishing

Midwater trawling and index gillnetting will be continued in all basins of Lake Erie and in Lake St. Clair. Index bottom trawling during a six week period in the late summer will be done at index stations in the western basin and the west-central basin area.

2. Yearling Walleye Index Gillnetting

This interagency program was continued in 1984 in an attempt to develop an index for walleye which would better reflect year-class strength.

The strong 1982 year-class was again most dominant in both bottom and canned gillnets from both the western and west-central basins.

3. Walleye Tagging in Western Lake Erie

From 1981-1984 walleye captured with large mesh gillnet were tagged and released in the Pelee Island and Hen-Chicken Island area of western Lake Erie. Tagging was done in March, April and May of each year and all walleye were sampled and tagged with the oval disc tag at the nape of the neck. In each year the majority of walleye sampled were maturing and ripe males, age 2 and older.

Current results from lumped (1981-84) and individual year data show that most walleye (76%) were recovered in the western basin with about 14% recovery in the central basin and 2.8% in the eastern basin. The majority of returns in the central basin were however from the west-central area with a small percentage in the far east central area. Most recaptures (≈70%) were made in the spring of the tagging year. Recaptures in the central basin were made mainly in the summer and fall. Two fish from the 1981 tagging were recaptured in the east-central basin in 1983.

4. Habitat and Fish Community in Mitchell Bay, Lake St. Clair

A study of the habitat and fish community in the Mitchell Bay-St. Luke area of Lake St. Clair was initiated in 1983. Data on water quality and distribution and abundance of different life stages of various fish species and crustacean zooplankton were collected and sorted from May to October in 1983 and

1984. Although turbidity is high due to resuspension of sediments, water quality in the Bay is generally good. When compared with data collected a decade earlier at stations at the mouth of the Bay and at the St. Luke area, water quality parameters have not changed significantly except nitrate-nitrogen which has doubled in concentration.

The project was expanded in 1984 to include a study of abundance and distribution of macrophytes. These data and those collected on young fish and crustacean zooplankton will be analysed in 1985. Sampling will also continue in 1985.

b. Lake Erie Fisheries Assessment Unit

1. Creel Census

Summer creel census will be continued in the western basin in 1985. Summer and winter creel census projects to be conducted by the Ministry's Simcoe District Office are planned for Long Point Bay. A summer creel census to be conducted by the Chatham District is planned for Rondeau Bay in 1985. The reinstatement of the Rondeau Bay census which had been conducted from 1977 through 1983 will complement an artificial reef evaluation study being planned by Chatham District for implementation in 1985.

2. Commercial Catch Sampling

The sampling of target and incidental species in the commercial catch will continue in 1985. With increased abundance of yellow pickerel (walleye) in the central basin in 1983, sampling of that species was initiated on a routine basis. In 1985, sampling of walleye in the central basin will continue at a level commensurate with the harvest.

3. Nanticoke Fish Study

The Nanticoke Fish Study was established in 1971 as part of a joint industry-government environmental monitoring program aimed at evaluating the impact of shoreline industrialization in the Nanticoke area of Long Point Bay. The 1983 field year marked the end of a three year period characterized by operational levels having been reached by the participating industries. In 1984, the results of the three year operational period were analysed and compared with the base-line conditions established between 1971 and 1978. Reports of that analysis will be prepared in 1985.

4. Salmonid Sampling

In 1985, salmon and trout encountered in routine commercial sampling of target species will continue to be examined for lamprey scars and wounds as well as identifying marks. Similar observations will be made on salmonids taken in the sport fishery where arrangements with users can be made.

Stomach contents of salmonids will be sampled from sport caught fish in 1985.

5. Young-of-the-Year (YOY) Trawling Index

In 1980, YOY index trawling was expanded in Long Point Bay following surveys conducted by the Research Unit in earlier years. This project was not carried out in 1983; however, the survey was resumed in 1984 and will be continued in 1985.

6. Commercial Catch Reports

The responsibility for entry of data as reported by Lake Erie commercial fishermen on their daily catch and effort was decentralized to the Assessment Unit in 1980. This activity requires the coding of records provided by fishermen and entry of data into a provincial data base. While the data entry function will remain with the assessment unit in 1985, the system of data storage and retrieval will be upgraded in support of the fisheries modernization initiative.

7. Central Basin Yellow Pickerel (Walleye) Reproduction Study

In 1984, a survey was conducted in the western part of the central basin to determine if walleye were reproducing in that area. Adult walleye were examined for maturity, eggs were pumped from suspected spawning areas, larvae were collected and juvenile fish were captured using beach seines and trawls. A report of the 1984 survey is in preparation.

In 1985, similar survey work is planned for the eastern part of the central basin.

c. Management

1. Regulation Changes

The regulation changes for sport fishing reported in 1984 will remain in place for 1985. There are no additional changes planned for 1985.

The commercial fishing regulations dealing with the individual quota system were challenged in a Judicial Review that commenced in September, 1984. A decision was released on October 15 suspending the quota system. A federal regulation became operational in mid-November resurrecting the quota system while the court decision was under appeal.

The appeal launched by the Province ended on November 15, 1984 and a decision was released on February 8, 1985. The Ontario Court of Appeal ruled that the legislation had been properly enacted and the individual quota system was valid. Some refinement of the legislation may be required and a review will take place during 1985.

2. Fish Stocking

Ganaraska River stock of rainbow trout, produced at the Normandale Fish Culture Station, were planted in a Lake Erie tributary for the first time in 1984. Use of this stock is planned for 1985. Two private plants of certified rainbow trout were made directly into Lake Erie. The two angling clubs involved planted the fish for mainly local put and take angling. Limited tag returns to date show a not unexpected dispersal of the fish planted off Erieau. Only one of these private plants is expected to continue during 1985.

The adult walleye transfer from the Thames River to Big Creek (Long Point Bay) took place for the third year in 1984. Results to date are encouraging with more walleye appearing in the creel of anglers fishing Long Point Bay although there may have been some influence from the easterly movement of western basin stock. The project will continue during 1985.

The following table outlines 1984 plantings and 1985 plans.

1984 Plantings

Rainbow trout

12,000 yg	Ganaraska stock (Normandale FCS) Big Creek tributaries 42° 36' 80° 27'
10,000 yg	certified hatchery stock (private plant) Port Stanley harbour 42° 40' 81° 13'
4,000 yg	certified hatchery stock (private plant) Erieau vicinity 1,000 tagged with MNR #8 jaw tag 42° 16' 81° 56'

Walleye

655 adults	Thames River stock Big Creek 42° 36' 80° 27' MNR metal jaw tags

1985 Planned

Rainbow trout

14,000 yg	Ganaraska stock (Normandale FCS) Big Creek tributaries 42° 36' 80° 27'
4,000 yg	certified hatchery stock (private plant) Erieau vicinity 1,000 with MNR #8 jaw tag 42° 16' 81° 56'

Walleye

1,000 adults	Thames River stock Big Creek 42° 36' 80° 27' 1,000 with MNR metal jaw tags

d. Lamprey Scarring/Wounding Rates on Coho Salmon

In 1984, coho were examined during routine commercial catch sampling, supplementary commercial catch sampling, from the sport fishery and during the collection of specimens for contaminant analysis. Observations of lamprey scarring/wounding were made by Ministry staff and members of user groups.

From sampling conducted by Ministry staff, 244 coho were examined. Of these, 204 were age 2^{+} fish and scars or wounds were observed on 9 fish (4%). Coho encountered in the spring (April-June) accounted for 73% of the fish examined.

In the period July through August, 459 coho (not aged) were examined by charter boat operators from Erieau to Long Point. Of these fish examined by operators, 10% exhibited scars or wounds.